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Editorial

Dedication

José Perdigão Dias da Silva was born on May 12, 1948 in Coimbra, the old university city in the center of Portugal, where he studied until his graduation in Mathematics. Towards the end of his degree, he became interested in matrix theory and multilinear algebra, after attending a series of lectures on generalized matrix functions given outside the University by Graciano de Oliveira. One early publication by José is a joint paper with Oliveira and Eduardo Marques de Sá, "On the eigenvalues of the matrix $A + XBX^{-1}$" (*Linear and Multilinear Algebra* 5 (1977/78) 119–128), which was one of the first to consider similarity invariants of sums of matrices in prescribed similarity classes, a notoriously difficult question.

Dias da Silva was a teaching assistant at the University of Lisbon in 1975–1976 and then at the recently created Universidade de Trás os Montes e Alto Douro in northern Portugal. He obtained his doctorate in Coimbra in 1980 under Oliveira's supervision with a thesis entitled "Equality of Decomposable Symmetric Tensors". After that he became a professor at the University of Lisbon and, since 1990, a full professor. He was a visiting professor at the California State University, Hayward, in 1982, at the University of Wisconsin, Madison, in 1993–1994, and at the Indian Statistical Institute, New Delhi, in 2000–2001. He retired from the University of Lisbon in 2009 but not from mathematical research.

Dias da Silva's thesis centered around his work on decomposable symmetric tensors. In it he presented conditions for equality of such tensors, a result R. Merris qualified as "dramatic" in his Mathematical Reviews comments on the paper in this journal where the results were published.

José proceeded to build an impressive body of work, while at the same time organizing a research group in Lisbon, now the Center for Linear and Combinatorial Structures (CELC). In the mid-1980s he studied groups of matrices preserving generalized matrix functions, starting with a paper with Graciano de Oliveira. While maintaining his earlier interests, in the following two decades he branched out to other subjects including combinatorics and matroids. An interesting and useful paper which

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illustrates his interest in nonnegative matrices is the paper with L. Elsner and C.R. Johnson titled "The Perron root of a weighted geometric mean of nonnegative matrices" (*Linear and Multilinear Algebra* 24 (1988) 1–13).

In the 1990s Dias da Silva became interested in additive number theory. In collaboration with Y. Hamidoune, he gave a surprising proof of the Cauchy–Davenport theorem on the cardinality of the sum of two subsets of $\mathbf{Z}_p$ by using a lower bound for the degree of the minimal polynomial of the Kronecker sum of two linear operators. Later, in a remarkable paper, Dias da Silva and Hamidoune used linear algebra techniques to prove a stronger version of a conjecture by Erdös and Heilbronn on the cardinality of the set of sums of the 2-subsets of a subset of $\mathbf{Z}_p$.

In the 1990s and continuing into the 2000s, and motivated by his interest in multilinear algebra, Dias da Silva worked intensively, often in partnership with Amélia Fonseca, on matroids defining and exploiting the rank partition of a matroid. The rank partition originated in his investigations concerning partitioning a matroid into disjoint independent sets of prescribed cardinalities which, in turn, has applications in his research on decomposable symmetrized tensors. The paper "Computing the rank partition and the flag transversal of a matroid" (*Discrete Math.* 21 (2000) 85–110), with Fonseca strongly exhibits his intellectual power in mathematics. As recently as 2009 he wrote a paper with M.B. Nathanson (*Discrete Math.*, 309, 4489-4404) concerning additive theory (Sidon sets) and matroids.

Among many other papers by Dias da Silva in more recent years, with several coauthors, it is worthwhile to mention a study with T. Laffey of an equivalence for polynomial matrices, which they apply to the problem of simultaneous similarity of matrices ("On simultaneous similarity of matrices and related questions", *Linear Algebra and its Applications* 291 (1999) 167–184). Another interest that José often came back to concerns existence questions for integral matrices satisfying certain prescribed conditions.

Other topics that Dias da Silva has made contributions to include inverse problems and partially ordered sets. As a tribute to his knowledge and contributions to multilinear algebra, Dias da Silva wrote, in collaboration with the Lisbon geometer Armando Machado, the chapter on multilinear algebra in the Handbook of Linear Algebra edited by Leslie Hogben.

José Dias da Silva placed research at the center of his professional activity and of his service work. He supervised 11 doctoral students: Fernando C. Silva, Carlos Gamas, Amélia Fonseca, Purificação Coelho, Isabel Faria, Cristina Caldeira, Rosário Fernandes, Henrique Cruz, Fátima Rodriques, and Maria Manuel Torres. He was a dedicated member of the LAA editorial board from 1996 to 2005, and also served as an editor for the journals *Portugaliae Mathematica*, *Linear and Multilinear Algebra*, *Proceedings of the Royal Irish Academy*, and *Mediterranean Journal of Mathematics*. He was an active member of the International Linear Algebra Society (ILAS), serving on several of its committees and chairing the Organizing Committee of the 1992 ILAS Conference in Lisbon. From 1996 to 2000 he was the first president of CIM, the Portuguese center member of ERCOM (the network of European Research Centers in Mathematics). His wife Lucília Carvalho, a statistician, has been his important and devoted supporter for many years.

It is a honor and pleasure to dedicate this issue of this journal to our friend José Perdigão Dias da Silva in recognition of his many important contributions to mathematics. We wish him many more years of a happy personal and mathematical life.

J. A. Dias da Silva, list of publications

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